Weekly Report for 08/18/2014

Highlights

• Presented "Ray tracing and heating analysis for ID30 vacuum chamber" at the Installation Readiness Review. (Kathy Harkay)

• Presented "Abort kicker analysis" at weekly AOP physics meeting, on work with J. Dooling, V. Sajaev, and Ju Wang. (Kathy Harkay)

• Specified how the SCU0 chamber should be vertically realigned, based on beam-based measurement. (Kathy Harkay)

APS Renewal and Upgrade

• Continued simulation study investigating how numerical parameters influence the predicted single bunch current. Determined when filtering, particle number, and initial offset do not influence results. (Ryan Lindberg)

• Worked with Xiang Sun to optimize a feedthrough design presented to us by Kuocera. (Chih-Yuan Yao)

• Optimized S35 stripline with Xiang Sun. The method we development is directly applicable to MBA kicke design. (Chih-Yuan Yao)

MCR Operations

Storage Ring Operations

• Specified how the SCU0 chamber should be vertically realigned during the Sept shutdown, and sent this to Y. Ivanyushenkov, M. Penicka, and W. Jansma. Applied and angle and offset to the data to achieve an optimum solution. (Kathy Harkay)

• Reviewed ID30 and SCU1 ray tracing results with Jason Lerch (AES/DD) and prepared a talk "Ray tracing and heating analysis for ID30 vacuum chamber" at the Installation Readiness Review. (Kathy Harkay)

• Discussed BLM hardware requirements for ID1 and SCU1 installations with J. Dooling. Discussed installation of fiber at ID1 downstream with J. Grimmer and J. Dooling. (Kathy Harkay)

• Did a tunnel walk-through with J. Dooling to note the mounting offsets of the ID6 BLM fibers (i.e. distance above and below the chamber midplane), future location of the ID1 fibers, potential location of a horizontal collimator at S38B:Q2, S38 vertical scraper location, and IK5 pinger geometry. (Kathy Harkay)

Booster Operations

• Cleaned up booster ramp correction logged data and error data directories so the system response is faster and easier to analyze. (Chih-Yuan Yao)

Linac Operations

• Participated in a meeting to discuss the change of Asynch timing in the linac. A. Pietryla stated that he could provide s/w that would make the switch to the new 400-W amplifier transparent wrt ITS timing requests. (Jeff Dooling)

Training

• Provided training and testing for a new operator. (Mike Hayes) (Stan Pasky)

APS Machine Studies

Storage Ring Studies

• Measured the SCU0 vertical chamber alignment using the beam-based alignment procedure and the chamber thermal sensors. Discussed how to specify the realignment with V. Sajaev, Y. Ivanyushenkov, and W. Jansma. Calculated the new ideal positions based on adding an angle and offset, and sent the specifications to the alignment team. (Kathy Harkay)

• Provided J. Dooling with a slide on the injection kicker config that kicks a single bunch into ID10, for his presentation at the weekly machine studies meeting on the Aug 12th transverse scintillator beam loss monitor (TLM) studies. (Kathy Harkay)

• Prepared and presented SCU0 Beam Loss Monitor calibration analysis at the Machine Studies meeting August 21. (Jeff Dooling)

• Also presented results from the Transverse Loss Monitor (TLM) scintillation screen recently installed in ID10 by W. Berg (ASD-DIA). (Jeff Dooling)

• Setup optics for next machine start up. (Aimin Xiao)

• Worked with Louis on ID30 local impedance measurement. (Aimin Xiao)

Booster Studies

• Tested a 1 Hz operation of booster BM with Bob Laird and Ju Wang. The purpose is to achieve better pulse width stability with 1Hz ramp cycle. (Chih-Yuan Yao)

APS Machine Research and Development

Storage Ring Research and Development

• Updated the APS impedance model to include all installed IDs and current number of BPMs. Began current limit simualtion study to compare with recent measurements. (Ryan Lindberg)

• Prepared a talk "Abort kicker analysis" for the weekly AOP physics meeting, on work in collaboration with J. Dooling, V. Sajaev, and Ju Wang. Focused on multi-bunch. multi-turn modeling results with IK1+IK4 and IK5 modified as a horizontal kicker. Developed an idea to add a collimator at S38B:Q2 to catch bunches that would be lost at the septum. Added multi-bunch, multi-turn analysis for IK5 as vertical pinger after speaking with L. Emery.Prepared and presented "Ray tracing and heating analysis for ID30 vacuum chamber" at the Installation Readiness Review. Reviewed ray tracing carried out by J. Lerch. Discussed the damage at the upstream transition inboard wall (rf springs) observed in a photo of the half-length 8-mm ID chamber that will be used for ID1 upstream of SCU1. Speculated that is may more likely be due to beam impact (a likely event) rather than x-rays from extreme steering (a rare event). ID30 transition is solid copper rather than slotted on the inboard side, as in other IDs, and the Cu would be damaged if it sees beam dumps. (Kathy Harkay)

• Gathering components for FO BLM installation in sector 1 ahead of SCU1 installation in January. (Jeff Dooling)

• Have asked S. Kramer (NSLS-II) to return fused-silica FO cables sent to him in 2009. (Jeff Dooling)

• Kramer asked if he could retain one cable for calibration with the CBLM system he has installed in the NSLS-II storage ring and I agreed. (Jeff Dooling)

• Met with J. Grimmer (ASD-MD) and K. Harkay to discuss installation of a FO bundle in ID1 during the upcoming shutdown; Grimmer said he would support the installation. (Jeff Dooling)

• Researched SR tune measurement amplifier upgrade options. Installed a Kamus amlifier (a loaner from RF group spare) for evaluation. Got very consistent tune data. (Chih-Yuan Yao)

Booster Research and Development

• Performed a test of booster ramp with double AFG ramp points (from 1024 to 2048) (suggested by Ju.) with Hairong and Shifu. Did not see clear advantage. But also did not see adverse effect. Installed the new ramps as operations configuration for further observations. (Chih-Yuan Yao)

• Further researched the effect of function code and offset of booster injection BPM history FFT on injection controllaw process. I concluded that the function code should be subtract without average. And the offset should be 6 for x- and 4 for y-plane. Averaging should be performed as sddscontrollaw process options. (Chih-Yuan Yao)

• Researched booster 1Hz timing temperary configuration with Frank, Ju and Bob Laird. (Chih-Yuan Yao)

ITS Research and Development

• Performed stress testing on a thermionic rf gun S/N 3G2. The conditioning followed by beam operation went very well. This gun will be transferred from the Injector Test Stand and placed in RG2 position. During the last of the 2014 user run the gun started showing high reflected power on the order of 2.2MWatts at startup. Nick Serno (Linac Manager) suggested we take advantage of the Aug/Sept maintenance period to replace this gun. (Stan Pasky)

Other Research and Development

• Prepared a few slides for 2 FEL talks: (Ryan Lindberg)

• 1) A. Zholents's talk on DWA-based FEL. (Ryan Lindberg)

• 2) K.-J. Kim's talk on the possiblility of a XFELO operating at the fifth harmonic at the LCLS-II (Ryan Lindberg)

• Graphene LDRD: Participated in graphene window tests in clean room. (Kathy Harkay)

• EC: Discussed QE paper with L. Boon. Suggested she compute the theoretical QE assuming an Al2O3 layer and the results look reasonable. (Kathy Harkay)

APS Machine Software

AOP Applications Software

• Updated all the tcl scripts that use the pv umon command because this now works with the latest version of oagwish. (Robert Soliday)

• Updated reviewSpaceUsed so that I can quickly find the directories with the most amount of data as well as the directories that are growing the quickest. (Robert Soliday)

• Continue testing IBS simulation code with various parameter settings. (Aimin Xiao)

Storage Ring

• Fixed an issue with the SR Up Down Double Sector machine procedure related to the A:QS4 PVs that are not connected to hardware. (Robert Soliday)

• Fixed an issue with the SR Fill History after a network issue. (Robert Soliday)

Injectors

- Added Greg Fystro's changes to the workstation setup tool for the ITS. (Robert Soliday)
- Switched the default Booster RF ramp waveform from bto4th to operations. (Robert Soliday)
- Fixed a problem with the Booster workspace setup files. (Robert Soliday)

General

- Updated sddsplot and mpl_motf because internal postscript comments longer than 1024 characters were causing printer jobs to hang. (Robert Soliday)
- Wrote programs to convert Agilent Arbitrary Waveform file to and from SDDS. (Robert Soliday)
- Updated the test stand machine procedures to include the L1:PC1 power supplies. (Robert Soliday)
- Helped Dooling with various scripts. (Robert Soliday)
- Wrote sddsecon which I ported from an IDL script. This program convolves a spectrum with a Gaussian function with a constant width. (Robert Soliday)
- Helped Janet Anderson compile the SDDS software on for RTEMS clients. (Robert Soliday)
- Changed the paths on a few cronjobs to avoid using the oxygen server. (Robert Soliday)
- Updated sddsplot to better handle autolog plots with multiple plot requests on the same panel. (Robert Soliday)
- Fixed a problem with the sddsSpaceUsed cronjob. It was scanning some directories twice. (Robert Soliday)

Simulation Software

- Fixed a problem with haissinski not initializing some variables before using them. (Robert Soliday)

IOC/EPICS/Controls/Linux/Solaris/Linux Clusters/Data Loggers/Simulation software

- Added the FPGA_BPM_Synch log-on-change logger. (Robert Soliday)
- Added PVs to various data loggers. (Robert Soliday)
- Updated the PSSGlobalWatchdog program to stop sending out warnings for some minor conditions per McNamara's request. Also added a pause feature so that if a warning keeps repeating, it will not send out a million emails. (Robert Soliday)
- Now keeping LiquidNitrogen data logger data for two years instead of one. (Robert Soliday)
- Updated the GdfidL licenses. (Robert Soliday)
- Updated mpsDumpReview to work with both .xz and .gz compressed files. (Robert Soliday)
- Converted most of the old data logger files to .xz from .gz compression. (Robert Soliday)
- Looked into upgrading the linux cluster execution nodes to CentOS7 but it doesn't look possible without first upgrading Lustre which I am reluctant to do because of the complexities. (Robert Soliday)

• Installed Spectra10 on the linux cluster. (Robert Soliday)

• Ordered and replaced RAID card in the luster file system that failed. (Robert Soliday)

• Fixed the backup hardware for the linux cluster. Nightly backups for /home and /lustre are working now. (Robert Soliday)

• Added cronjob to organize TopUpIK files. (Robert Soliday)

• Installed a disk usage utility called ncdu to help me understand our disk usage so that I might be able to identify areas I could reduce it. (Robert Soliday)

• Installed a nightly cronjob to compress mpsDump files. (Robert Soliday)

• Re-enabled the old SR BPM Libera data logger. (Robert Soliday)

Web Site

• Released a new version of Elegant for all the supported operating systems. (Robert Soliday)

• Updated APSICMS.tcl to work with the new version of ICMS. (Robert Soliday)

Meetings, workshops, conferences, committees, LMS related, and reviews

• Participated in a P3 workshop planning teleconference as a member of the scientific organizing committee. (Kathy Harkay)

• Attended PC gun installation review and provide my input. (Chih-Yuan Yao)

• Attending PCGun and Radia Beam THz meetings bi-weekly. (Stan Pasky)

Education, Mentoring and outreach

• Prepared 2014 Annual Report for NSF grant supporting L. Boon. (Kathy Harkay)

Safety and Required Training

• Complete ESH108 and ESH223 training. (Aimin Xiao)

Miscellaneous

• Started learning how to program Android apps. (Robert Soliday)

• Wrote a program to convert a specific HDF format to SDDS for Gregor Hurtig (DESY) (Robert Soliday)

• Helped Emery and Shang with a gnome keyring problem that was interfering with SVN. (Robert Soliday)

• Helped David Ondreka (PBSP) with SDDSPython. (Robert Soliday)

• Added Mike Hahne to the permission list for all the SR programs in OAGapps. (Robert Soliday)

• took 5 days vacation (Hairong Shang)

• Helped IHEP people on elegant run issues. (Aimin Xiao)

• Took half day vacation off. (Aimin Xiao)

• At the start of the Aug./Sept. maintenance period water was found on the RG2 support table. The disassemble of the RG2 kicker box resulted in finding that the absorber tubing was ruptured. This will require that the kicker beam absorber be removed for repairs. This is very lengthy and tedious job... (Stan Pasky)

• Overseeing PCGun installation as well as assisting with the make up of the machine protection interlock system for PCGun operations. Also overseeing medm display updates and creation. (Stan Pasky)